IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant	:	Klaus TANK
Serial No.	:	10/501,044
For	:	METHOD OF MAKING A TOOL COMPONENT
Filed	:	July 8, 2004
Examiner	:	Marcheschi, Michael A.
Art Unit	:	1755
Confirmation No.	:	3146

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CERTIFICATE OF ELECTRONIC FILING

I hereby certify that this correspondence is being Transmitted via Electronic Filing Services on November 24, 2008.

Patricia A. Dubyne
(Name of person signing transmittal)

Patricia A. Dubyne
Signature

November 24, 2008
Date of Signature

APPELLANT'S APPEAL BRIEF

Mail Stop Appeal Briefs-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

Sir:

This is an Appeal from the Office Action issued by the Examiner dated July 28, 2008, in the above-identified application, rejecting claims 1 – 13. A Notice of Appeal was filed on

October 24, 2008. This Brief is submitted in accordance with 37 C.F.R. §41.37. Submitted herewith is the payment in the amount of $540.00. The Commissioner is authorized to charge any additional fee, or credit any overpayment for this paper, to Deposit Account No. 50-0320.

1. REAL PARTY IN INTEREST

The real party in interest is Element Six (Pty) Ltd., as evidenced by the Priority Document, South African Application No. 02/2002 (Jan. 10. 2002). Element Six (Pty) Ltd. is a South African corporation with offices at Debid Road, Nuffield Springs, 1559, Gauteng, South Africa.

2. RELATED APPEALS AND INTERFERENCES

Upon information and belief, the undersigned attorney does not believe that there is any appeal or interference that will directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal.

3. STATUS OF THE CLAIMS

The Application was filed with claims 1-13 on February 24, 2005, and assigned Application Serial No. 10/501,044. This application is national stage of PCT/IB03/00030 under 35 U.S.C. §371, filed on January 9, 2003 and claims the benefit of South African Patent Application No. 2002/0220, filed on January 10, 2003.

The Examiner issued an Office Action on August 30, 2006 ("the 2006 Office Action"). In the 2006 Office Action, the Examiner rejected claims 1 – 13. Claims 3, 4, 11 and 12 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention.

Claims 1 – 3 and 5 – 13 were rejected under 35 U.S.C. § 102(a) as anticipated by United States Patent Application No. 09/881,931 (Publication No. 2002/0020564) by Zhigang Fang, et al. ("Fang").[1] Claims 1 – 3, 5 – 7, and 10 – 12 were rejected under 35 U.S.C. § 102(b) as anticipated by Portwood.

Claims 1 – 13 were rejected under 35 U.S.C. § 103(a) as obvious over Fang in view of United States Patent No. 6,290,008 to Gary Portwood, et al. ("Portwood"). Claim 4 was separately rejected under 35 U.S.C. § 103(a) as obvious over Fang alone and also over Portwood alone.

In response to the Office Action, Appellant responded on February 28, 2007 by amending Claims 1, 3, 4, and 13 to add subject matter. Appellant also argued the statutory bases of the claims.

The Examiner then issued a 2007 Office Action on June 13, 2007 ("the 2007 Office Action"). In the 2007 Office Action, the Examiner first withdrew all rejections based on Fang alone (claims 1- 3 and 5 - 13 rejected under 35 U.S.C. 102(a) and Claim 4 rejected under 103(a)). The Examiner maintained the rejection of claims 1 – 13 under 35 U.S.C. § 103(a) as obvious over Fang in view of Portwood. Claims 1 – 3, 5 – 7, and 10 – 12 were rejected under 35 U.S.C. § 102(b) as anticipated by Portwood. Claim 4 was rejected under 35 U.S.C. § 103(a) as obvious over Portwood.

Appellant filed a Notice of Appeal on December 12, 2007.

Before filing a Brief in Support of the Appeal, Appellant filed a Request for Continued Examination on July 14, 2008 without an amendment.

[1] Application Serial No. 09/881,931 issued as U.S. Patent No. 6,607,835 on August 19, 2003. For the Board's convenience Appellant herein will continue to cite to paragraph numbers in Publication No. 2002/0020564.

The Examiner issued a first action Final Rejection on July 28, 2008 wherein the Examiner maintained the rejection of claims 1 – 13 under 35 U.S.C. § 103(a) as obvious over Fang in view of Portwood. Claims 1 – 3, 5 – 7, and 10 – 12 were rejected under 35 U.S.C. § 102(b) as anticipated by Portwood. Claim 4 was rejected under 35 U.S.C. § 103(a) as obvious over Portwood.

Appellant filed a Notice of Appeal on October 19, 2008 from which this Appeal Brief is being filed.

Accordingly, the status of the claims is summarized as follows:

Claims Rejected	1-13
Claims Allowed or confirmed	None
Claims Withdrawn	None
Claims Objected to	None
Claims Canceled	None
Claims Appealed	1-13

The rejected claims 1 – 13 are set forth in the Appendix attached hereto.

Appellant appeals the Final Rejection of claims 1 – 13.

4. STATUS OF THE AMENDMENTS

Appellant herewith submits, on November 24, 2008, an Amendment Under 37 C.F.R. 41.33(a) to correct a typographical error in claim 13, which error has been corrected in the listing of the claims in Appendix I, as was recommended by Ms. Cheryl Moore of the Board of Patent Appeals and Interferences in a telephone conversation on November 21, 2008.

Appellant believes that all the submitted Amendments have been entered.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

The citations to Figures and Specification locations are provided immediately following elements of independent claims 1 and 13, which are summarized below. However, such citations are provided merely as examples and are not intended to limit the interpretation of the claims or to evidence or create any estoppel.

There are two independent claims (claims 1 and 13) in the instant application. Independent claim 1 is directed to a method of producing a tool component of ultra-hard abrasive material. A fiber is provided having a core comprising ultra-hard abrasive particles or precursor particles to said particles and an optional second phase (described in the specification from page 3, first five lines under "Description of Embodiment"; from page 3, last two lines to page 4, line 3; page 5, lines 1 - 3). The fiber has a coating comprising a mixture of carbide particles and particulate binder metal (described in the specification from page 3, lines 5 to 7; page 4, the second and third paragraphs; page 5, lines 3 - 5; Figures 1 and 2).

A bundle of a plurality of the fibers is produced (described in the specification at page 3, second paragraph under "Description of Embodiment," lines 1 - 2; page 4, second paragraph lines 1 - 5; page 5, second paragraph lines 1 - 5; Figures 3 and 4).

The bundle of the fibers is severed transverse to the length of the fiber (described in the specification at page 3, second paragraph lines 1 -2; page 5, second paragraph lines 5 - 6; Figure 5). A green state product is made by placing the severed layer on a surface of a substrate (described in the specification at page 3, line 2 of the second paragraph under "Description of Embodiments; page 4, fifth paragraph; page 5, second paragraph lines 7 - 9; Figure 6).

The severed layer and substrate is subject to high temperature and pressure conditions to produce a tool component of an abrasive compact with ultra-hard abrasive particles (described in

the specification at page 3, second paragraph under Description of Embodiments at lines 3 - 5; page 5, third paragraph lines 4 - 9).

Independent claim 13 is directed to a method of producing a tool component of ultra-hard abrasive material. A fiber is provided having a core comprising a mixture of carbide particles and particulate binder material (described in the specification at page 2, last paragraph; from page 3, first paragraph under "Description of Embodiment"; page 4, second paragraph lines 1 - 2). The coating of the fiber comprises a mass of ultra-hard abrasive particles or precursor to said ultra-hard abrasive particles and an optional second phase (described in the specification at page 2, last paragraph; from page 3, first paragraph under "Description of Embodiment"; page 4, second paragraph lines 1 - 2).

A bundle of said fibers of claim 13 is produced and further processed as described above with reference to claim 1.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellant requests review of the rejections, specifically:

A. Claims 1- 13 rejected under 35 U.S.C. § 103(a) as allegedly obvious over Fang in view of Portwood;

B. Claims 1 - 3, 5 - 7, and 10 - 12 rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Portwood; and

C. Claim 4 rejected under 35 U.S.C. § 103(a) as allegedly obvious over Portwood.

7. ARGUMENTS

A. THE §103 REJECTIONS SHOULD BE WITHDRAWN FOR CLAIMS 1 - 13 BECAUSE THE CLAIMS ARE NOT OBVIOUS

1) The Combination of the Cited References Do Not Teach or Suggest The Methods Claimed in the Instant Application

The Appellant respectfully submits that the 2007 Office Action inappropriately combines Fang and Portwood to find that the claimed methods are obvious under 35 U.S.C. § 103(a).

Claims 1 - 13 were rejected as obvious in view of Portwood for the same reasons as set forth in the previous Office Action of August 30, 2006, which was incorporated by reference. In that Office Action, the Examiner contended Fang teaches a method of producing a tool component comprising Fang's steps (1) through (6), which steps were alleged to read on the claimed methods of the instant application. However, the Examiner's characterization of Fang's steps (1) and (6) are mistaken and Fang fails to disclose such steps claimed in the instant application as follows.

a. Fang does not disclose the use of Diamond and Cubic Boron Nitride

The Examiner described Fang as teaching "providing a plurality of fibers, each fiber having a core (diamond, boron nitride or WC-Co core) and a shell (diamond, boron nitride or WC-Co shell)" for producing into bundles. The 2006 Office Action at 3 – 4 (emphasis added); see id. at 5. The instant application claims use of diamond and cubic boron nitride in pre-polycrystalline state, before being subject to sufficient temperature and pressure conditions to reach the polycrystalline state. This is distinguishable from Fang's method which uses polycrystalline diamond ("PCD") and polycrystalline cubic boron nitride ("PCBN") which are already in polycrystalline state to form the fibers.

Fang consistently uses the terms "PCD" and "PCBN" when describing the hard phase or the fiber core. For example,

> "[c]ermet materials are materials that comprise both a ceramic material and a metal material. An example cermet material is cemented tungsten carbide (WC-Co) that is made from tungsten carbide (WC) grains and cobalt (Co). Another class of cermet materials is polycrystalline diamond (PCD) and polycrystalline cBN (PCBN) that have been synthesized by high temperature/high pressure processes."

Fang [0024] (emphasis added); see also, e.g., Fang [0041], [0066] - [0067].

In the 2007 Office Action, the Examiner asserted that "[Fang] states that the particles can be PCD, PCBN or the like and the limitation 'the like' would suggest to the skilled artisan that regular (not polycrystalline) diamond or boron nitride can be used and these would be unsintered particles." 2007 Office Action at 3. "In an example embodiment, the hard phase can be formed from cermet materials, PCD, PCBN and the like,..." Fang [0030]. "The like," however refers to other hard materials, e.g. cermet materials:

> "Composite constructions of this invention comprise a first structural phase formed from a hard material selected from the group consisting of cermet materials, polycrystalline diamond, polycrystalline cubic boron nitride, and mixtures thereof,..." Fang [0008] (emphasis added).

> "Cermet materials are materials that comprise both a ceramic material and a metal material. An example cermet material is cemented tungsten carbide (WC-Co) that is made from tungsten carbide (WC) grains and cobalt (Co). Another class of cermet materials is polycrystalline diamond (PCD) and polycrystalline cBN (PCBN) that have been synthesized by high temperature/high pressure processes." Fang [0024].

Therefore, "the like" refers only to a hard material selected from various cermets, not to pre-crystalline particulate mass of diamond and cubic boron nitride that is not yet crystallographically stable in the polycrystalline state. This is made even clearer when the sintering conditions of Fang are considered as discussed below.

b. Fang fails to disclose Temperature and Pressure Conditions at Which the Ultra-hard Abrasive Particles are Polycrystalline as recited in independent claims 1 and 13

The Examiner stated in the 2007 Office Action that "it is clear that a green state product is produced prior to sintering-see section [0036]." The 2007 Office Action at 3. Regarding this point, Appellant submits that Fang's use of the term "green state" is not identical to that in the present application. Fang uses "green state" to refer to any pre-composite state of the already-ultrahard material and a relatively softer phase of the material before consolidation. For example:

> "The dewaxed green-state product, having retained its ordered microstructure, is further heated to an elevated temperature near the melting point of cobalt, to form a solid, essentially void-free integral composite construction having the desired ordered microstructure." Fang [0037] (emphasis added).
>
> "The shaped inserts are then heated to about 200 to 400° C. in vacuum or flowing inert gas to debind the composite, and the inserts are then sintered at an elevated temperature below the melting point of the binder phase material, in this case below the melting temperature of cobalt. " Fang [0045] (emphasis added).
>
> "A key feature of composite constructions of this invention is presence of ordered or controlled material phases, thereby providing the desired oriented microstructure. In order to ensure the production of such final product it is essential that the oriented or ordered arrangement of material phase be retained during the process of making the composite construction. Thus, composite constructions of this invention are made by first constructing a green-state product having the desired arrangement of material phases, and then consolidating an [sic] sintering the green-state product in a manner that does not permit appreciable migration between the material phases, thereby retaining the desired oriented microstructure." Fang [0046] (emphasis added)..

That is, in Fang the hot pressing and hot isostatic pressing conditions are suitable to ensure there is no degradation of the diamond or cubic boron nitride, but they are not the temperature and pressure conditions at which the diamond and cubic boron nitride are

crystallographically stable and suitable for the creation of PCD from diamond and PCBn from cubic boron nitride. Fang [0047]. Fang is silent on the use of elevated pressure in sintering the green-state product.

In contrast, the instant application uses elevated temperature and pressure high enough for diamond synthesis: "The green state product of Fig. 6 is placed in a capsule" that is "placed in the reaction zone and the contents of the capsule subject to diamond synthesis conditions." The Specification at 5, third paragraph. Not only is an elevated temperature, but also elevated pressure of 4-8 GPa is required. Thus, in the instant application, sintering of the "green-state" product not only results in consolidation of the abrasive particles and coating onto the substrate surface, but also the formation of polycrystalline (i.e., bonded inter-crystal) diamond, boron nitride, and cemented carbide or others depending on the initial material used. Therefore, the "green-state" and sintering conditions as taught by Fang are different from those required in the instant application.

c. Combining Fang with Portwood Does Not Result in the Methods of the Present Application

In the 2006 Office Action, the Examiner stated Fang disclosed a step of "consolidating (attaching to the substrate) the material and by hot isostatic pressing (broadly reads on elevated temperature and pressure since the claims do not defined [sic] otherwise)." Office Action, August 30, 2006 at 4; see id. at 5. The Office Action then referenced Portwood for the "utilization of a high temperature high pressure technique" in attaching composites to a cemented carbide substrate in view of Portwood column 16, lines 19-23. August 30, 2006 Office action at 5. The 2007 Office Action stated that "attacking references individually where the rejections are based on combination of references" cannot show nonobviousness." Office Action, June 13, 2007 at 3.

Appellant responds that the skilled artisan would not combine Fang with Portwood to arrive at the methods claimed here. Specifically, such a person would not put PCN, PCBN, tungsten carbide, or other cermet material, to the onerous temperature and pressure of the instant application based on Portwood. Such a requirement would not only be unnecessary because the polycrystalline diamond, PCBN, or ultra-hard cermet has already been formed, but also, higher temperature and pressure involves higher cost in time and resources for every single piece manufactured.

Accordingly, the skilled artisan would not have combined Fang and Portwood to reach at the method claimed in the present application, namely, forming an ultra-hard abrasive compact starting from particulate diamond, cubic boron nitride, or pre-ultrahard phase material.

2) The Claimed Methods are Advantageous Over the Methods Taught in the Cited References

The Examiner stated in the Final Rejection that the advantages of the claimed method when compared to the method of Fang are "not persuasive because no clear evidence (tabular data) is provided and the specification does not refer to the method of Fang, specifically. The Examiner is correct that Fang is not cited in the specification, but the advantage of the present method can be seen plainly by contrasting with Fang's method. Because the abrasive layer of the present method is in pre-ultra-hard green state wherein diamond crystals are not bonded when the abrasive layer is applied to the substrate, the abrasive layer is flexible for easy application onto substrate surfaces. The abrasive layer also has the ability to mold to curved surfaces. Moreover, the sintering process of the instant application is simpler than that of Fang

in which a polycrystalline diamond, PCBN, or cermet is produced in the final state, and then subsequently sintered a second time with binder onto a substrate. These features, though not lending to tabular data, are clear advantages offered by the claimed methods of the present application.

B. THE §102(b) REJECTION SHOULD BE REVERSED BECAUSE PORTWOOD DOES NOT DISCLOSE EACH AND EVERY ELEMENT OF THE CLAIMS

The Examiner cited to Portwood, col. 13, line 68 – column 14, line 29 as teaching a method that involves six steps. The 2007 Office Action at 4. A closer examination of the cited section of Portwood refutes this contention.

Portwood does not claim or describe each and every element of the methods of claims 1 – 13. First, contrary to the Examiner's statement that "each fiber contains regions of ultra hard abrasives (i.e., diamond) and regions of carbide…", there are no regions of carbide between successive layers or regions of ultra-hard material. Office Action, June 13, 2007 at 4. Instead, Portwood creates a structure in which two or more different types of ultra-hard material form the outer working surface. The binder between successive layers or regions of ultrahard material in Portwood is for the purpose of bonding or cementing successive layers of ultra-hard material to each other:

> "Generally, the composite construction materials include an oriented microstructure comprising arrangements of hard phase materials such as polycrystalline diamond or polycrystalline cubic boron nitride, and relatively softer binder phase materials such as metals, metal alloys, and in some instances cement materials. FIG. 13 illustrates two embodiments of the composite construction material." Portwood at col. 13, ll. 59 – 64

Portwood is concerned with a different product than the present invention. Portwood requires regions of different types of ultrahard material with visible regions. The macroscopic nature of the Portwood inserts is evident from Portwood's FIGS. 6 - 10, where the relative scale of the different zones is such that they are macroscopically visible.

In contrast, the invention of this application requires alternating regions of ultrahard material and cemented carbide that is achieved by the fiber bundling and cross-sectioning. Each fiber contains region of ultra-hard abrasive and region of carbide. Thus, the tool components produced by the method of the present application would be termed mesoscopic or microscopic in that the tool components are on a finer scale. Also, the components comprise a mixture of zones of ultrahard material and carbide particles, as opposed to the Portwood concept, which has both zones containing ultrahard phases.

Significantly, the Portwood disclosure fails to disclose use of pre-polycrystalline ultrahard material such as diamond or cubic boron nitride. The Examiner recited six steps on page 4 of the 2007 Office Action, citing to Portwood at "column 13, line 68 – column 4, line 29." The first step was said to involve providing "a plurality of fibers, each fiber having a core (hard particle mass of diamond, boron nitride) and a shell (WC-Co-cermet material)." Office Action, June 13, 2007 at 4. However, the Portwood disclosure cited above does not teach use of "particle mass of diamond or cubic boron nitride," as the Examiner stated. That section of Portwood discloses a plurality of coated and bundled fibers, where "[e]ach core comprises a core formed from a hard phase material such as polycrystalline diamond or polycrystalline cubic boron nitride." Portwood 14:1 – 4 (emphasis added.) Thus, the "green state" product of

FIG. 13A, on which the Examiner relied for the rejection, contains PCD or PCBN, not individual diamond or cubic boron nitride particles.

Portwood also refers to inserts made by using commonly known paper or tape method. Portwood, col. 12, ll. 5 – 58. In that method, a paper or tape having ultra-hard abrasives of different types and particle sizes is made by repeated roller-compaction. Portwood refers to, and incorporates by reference U.S. Patent 5,766,394 in its entirety. This patent describes the roller-compaction process:

> "The high shear compaction material is composed of particles of ultra hard material such as diamond or cubic boron nitride, an organic binder such as polypropylene carbonate and possibly residual solvents such as methyl ethyl ketone (MEK). The sheet of high shear compaction material is prepared in a multiple roller process. For example, a first rolling (pass) in a multiple roller high shear compaction process produces a sheet approximately 0.25 mm thick. The sheet is then lapped over itself and rolled for a second time, producing a sheet of about 0.45 mm in thickness. The sheet may either be folded or cut and stacked to have multiple layer thickness."

The successive compaction produces

> "a high shear in the tape and results in extensive mastication of the ultra hard particles, breaking off corners and edges but not cleaving them and creating a volume of relatively smaller particles in situ. This process also results in thorough mixing of the particles, which produces a uniform distribution of the larger and smaller particles throughout the high shear compaction material. The breakage rounds the particles without cleaving substantial numbers of the particles."

U.S. Patent 5,766,394, col. 3, lines 1 – 20. The paper or tape is then placed on a surface of a substrate, which then is subjected to elevated temperature and pressure conditions.

In contrast, an aspect of the claimed method of the present invention is for creating a green state product from a plurality of fibers. The fibers are extruded through a nozzle and cut at a cross section to produce a layer, which is placed on a substrate and sintered to polycrystalline state to produce a working portion. The working portion comprises a composite material

comprising essentially a honeycomb structure. Neither Portwood nor the '394 patent teaches such method and tool component.

The above stated analyses lead to the conclusion that Portwood does not anticipate the claimed methods. Appellant therefore requests the Board's thorough consideration and reversal.

C. THE §103 (a) REJECTION OF CLAIM 4 SHOULD BE REVERSED BECAUSE PORTWOOD FAILS TO RENDER CLAIM 4 OBVIOUS

Claim 4, depends from claim 1 and is patentable over Portwood for at least the reasons argued above. Moreover, claim 4 recites, "the coating further comprises an organic binder which bonds the mixture of carbide particles and particulate metal binder into a coherent form."

The Examiner rejected Claim 4 as obvious over Portwood stating, without any support, "[o]ne skilled in the art would have appreciated and therefore found it obvious to utilize a binder to temporarily bond the coating together. This concept being the same as that for which the reference utilizes an organic binder for." Office Action, August 30, 2006 at 6.

Appellant contends this is a mere conclusory statement either, (1) that relies on "Official Notice," or (2) lacks the required justification for an obviousness rejection.

1) Appellant Challenges The Factual Assertions As Not Properly Officially Noticed Or Not Properly Based Upon Common Knowledge

The Examiner's reasons for asserting Portwood discloses the claim 4 element "the coating further comprises an organic binder which bonds the mixture of carbide particles and

particulate metal binder into a coherent form" seem to come from the Examiner's own deduction that such a combination would be advantageous and, as such, are tantamount to Official Notice.

From the MPEP 2144.03(E): "Any rejection based on assertions that a fact is well-known or is common knowledge in the art without documentary evidence to support the examiner's conclusion should be judiciously applied. Furthermore, as noted by the court in *Ahlert*, any facts so noticed should be of notorious character and serve only to 'fill in the gaps' in an insubstantial manner which might exist in the evidentiary showing made by the examiner to support a particular ground for rejection. *See, for example, In re Zurko*, 258 F.3d 1379, 1386; *In re Ahlert*, 424 F.2d 1088, 1092."

Further, "[a]s noted by the court in In re Ahlert, 424 F.2d 1088, 1091 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be 'capable of such instant and unquestionable demonstration as to defy dispute.' (citing *In re Knapp Monarch Co.*, 296 F.2d 230, 132 USPQ 6 (CCPA 1961))." MPEP 2144.03 (emphasis added).

First, the Office Action states, without any support, in the 2006 Office Action, "[o]ne skilled in the art would have appreciated and therefore found it obvious to utilize a binder to temporarily bond the coating together. This concept being the same as that for which the reference [Portwood?] utilizes an organic binder for" Office Action, August 30, 2006 at 6. Appellant challenges the Examiner to provide a reference that suggests the combination without using Appellant's specification as a blueprint.

Appellant contends the Office Action depends on mere conclusory statements and an impermissible reliance on Official Notice as the reason to read into Portwood an element not explicitly described therein. The combination of claim 4 can not be characterized as of notorious character or insubstantial, as asserted in the Office Action. Certainly, the combination of

features recited in claim 4 is not capable of "instant and unquestionable demonstration as to defy dispute." These features are neither "basic knowledge" nor "common sense." In re Lee, 277 F.3d 1338, 1345 (Fed. Cir. 2002) ("Deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense.'").

The recited element of claim 4 is not a mere substitution of one known element for another having a predictable result. Indeed, the claimed element is part of a complex arrangement of elements neither intuitive nor instantly recognizable. Appellant contends that claim 4 recites substantive features that can not be overcome with Official Notice.

2) The Examiner's Rejection Of Claim 4 Lacks Proper Justification For An Obviousness Rejection

The Office Action makes the conclusory statement, "[o]ne skilled in the art would have appreciated and therefore found it obvious to utilize a binder to temporarily bond the coating together. This concept being the same as that for which the reference utilizes an organic binder for." However, the Office Action provides no analysis to satisfy the conclusion. The rejection fails to provide any analysis applying the *Graham* factors to support an obviousness rejection. The Examiner provides no analysis for:

(1) Determining the scope and content of the prior art;

(2) Ascertaining the differences between the claimed invention and the prior art; and

(3) Resolving the level of ordinary skill in the pertinent art.

In view of the guidance provided by the Supreme Court in *KSR International Co. v. Teleflex Inc.* 127 S. Ct. 1727 (2007), the Examiner must articulate a reason or rationale to support an obviousness rejection under 35 U.S.C. §103. The rationale should be based on the state of the art and not on impermissible hindsight (e.g., improper-hindsight reasoning using applicant's disclosure).

The rejection must be withdrawn because the Examiner provides no findings of fact concerning the state of the art and the teachings of the references applied. Moreover, there are no explicit findings as to how a person of ordinary skill would have understood prior art teachings, or what a person of ordinary skill would have known or could have done. That is, the Examiner failed to provide an analysis as required under KSR.

Thus, Appellant contends, independent claim 4 is patentable over Portwood because that reference does not disclose each and every element recited in the claim.

CONCLUSION

For the reasons discussed above, claims 1– 13 are patentable. It is, therefore, submitted that rejection of claims 1 – 13 is in error, and a reversal by the Board is respectfully solicited.

Respectfully submitted,

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APPENDIX I

CLAIMS ON APPEAL

1. A method of producing a tool component including the steps of: (1) providing a plurality of fibres, each fibre having a core comprising a mass of ultra-hard abrasive particles or precursor to said ultra-hard abrasive particles and optionally a second phase, and a coating comprising a mixture of carbide particles and particulate binder metal, (2) producing a bundle of the fibres, (3) severing the bundle transverse to its length to produce a layer, (4) placing the layer on a surface of a substrate to produce a green state product, and (5) subjecting the layer and substrate to elevated temperature and pressure conditions at which the ultra-hard abrasive particles are crystallographically stable to produce an abrasive compact of the ultra-hard abrasive particles.

2. A method according to claim 1, wherein the bundle of fibres is extruded prior to being severed to produce the layer.

3. A method according to claim 1, wherein the core further comprises an organic binder and wherein the core comprises a mixture of diamond or cubic boron nitride particles and an appropriate solvent/catalyst, in particulate form, bonded into a coherent mass form by means of an organic binder.

4. A method according to claim 1, wherein the coating further comprises an organic binder which bonds the mixture of carbide particles and particulate metal binder into a coherent form.

5. A method according to claim 1, wherein the carbide particles are tungsten carbide particles, tantalum carbide particles or molybdenum carbide particles.

6. A method according to claim 1, wherein the substrate is a cemented carbide substrate.

7. A method according to claim 1, wherein the coating comprises one or more layers.

8. A method according to claim 7, wherein the coating comprises more than one layer, each layer differing from an adjacent layer in physical and/or chemical properties.

9. A method according to claim 8, wherein one layer has coarser or finer carbide particles than the adjacent layer (s) or contains a different metal binder to that in the adjacent layer (s).

10. A method according to claim 1, wherein the tool component comprising the substrate has a working portion produced from the layer bonded to a surface thereof.

11. A method according to claim 10, wherein the working portion comprises a composite material comprising essentially a honeycomb structure of cemented carbide and abrasive compact material within the pores of the honeycomb structure and bonded to the honeycomb structure.

12. A method according to claim 11, wherein the pores of the honeycomb structure are ordered or random.

13. A method of producing a tool component including the steps of: (1) providing a plurality of fibres, each fibre having a core comprising a mixture of carbide particles and particulate binder metal, and a coating comprising a mass of ultra-hard abrasive particles or precursor to said ultra-hard abrasive particles and optionally a second phase, (2) producing a bundle of the fibres, (3) severing the bundle transverse to

its length to produce a layer, (4) placing the layer on a surface of a substrate to produce a green state product, and (5) subjecting the layer and substrate to elevated temperature and pressure conditions at which the ultra-hard abrasive particles are crystallographically stable to produce an abrasive compact of the ultra-hard abrasive particles.

APPENDIX II

EVIDENCE

None

APPENDIX III

RELATED PROCEEDINGS

None